

PHC6089 Public Health Computing (3 credit hours)

Spring: 2020

Delivery Format: On-Campus

Tuesday 2-3rd Periods and Thursday 2nd Period in HPNP 1101

Course Content in E-Learning using CANVAS: <http://elearning.ufl.edu>

Instructor Name:	Dr. Yichao Yu
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Phone Number:	352-294-5927
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Office Hours:	Tuesday 3-4 pm in office, or by appointment
Teaching Assistants:	Xiaoru Dong (xdong1@ufl.edu)
Preferred Course Communications:	Email or CANVAS Inbox

Prerequisites

PHC6052 Introduction to Biostatistical Methods, or approval of the instructor

Purpose and Outcome

Course Overview

This is a three-credit course which covers using SAS and R to manage and analyze public health data. Students will learn how to import, modify, visualize and perform common analyses of public health data using SAS and R.

Relation to Program Outcomes

This three-credit course is a required concentration core course for MPH Biostatistics students and covers the following competencies

- Describe the role of biostatistics in public health research.
- Use appropriate statistical methodology to address public health problems.
- Apply software to conduct statistical analyses.

Course Objectives and/or Goals

Upon successful completion of the course, students will be able to:

- CO-1: Import, export, store, modify, visualize, and analyze public health data using SAS and R.
- CO-2: Demonstrate how to use common SAS procedures and R functions to analyze public health data.
- CO-3: Create SAS MACROS and user defined R functions to solve complex problems.
- CO-4: Use the Output Delivery System to control SAS output.
- CO-5: Implement public health data analyses using SAS and R.

- CO-6: Plan and implement simulations using SAS and R.

Instructional Methods

This course is presented using live lectures. Lectures will be given during Tuesday 2nd and 3rd periods and Thursday 2nd period. Throughout the lectures, students will complete short programming exercises using SAS and R to reinforce and practice the techniques covered during the lecture.

Description of Course Content

Course Schedule

Week	Date(s)	Topic(s)	Readings
1	1/6-1/10	Syllabus and Introduction to R and RStudio	The Book of R: Appendix A, B, Chapters 1, 2, and 8
2	1/13-1/17	Subsetting and Summarizing Data in R HW1: Due 1/23	The Book of R: Chapters 3, 4, 5, 7, 13, and 14
3	1/21-1/24	Data Classes and Data Cleaning in R	The Book of R: Chapters 3, 4, 5, and 6 R for Data Science: Chapter 14
4	1/27-1/31	Data Manipulation in R HW2: Due 2/6	The Book of R: Chapters 12 and 13
5	2/3-2/7	Data Visualization in R	The Book of R: Chapters 14, 23 and 24 R for Data Science: Chapter 3
6	2/10-2/14	Loops, Functions, and Statistical Analysis in R HW3: Due 2/20	The Book of R: Chapters 9, 10, 11, 18, 19, 20, and 21
7	2/17-2/21	Simulations in R, Reports with Rmarkdown, and Shiny Apps	R for Data Science: Chapters 27, 29, and 30
8	2/24-2/28	Work on R Project R Project: Due 3/10	
9	3/2-3/6	SPRING BREAK, NO CLASS	
10	3/9-3/13	Introduction to SAS HW4: Due 3/19	LSB: Chapters 1, 2, and 10 LSBE: Chapters 1, 2, and 3
11	3/16-3/20	Subsetting and Summarizing Data in SAS	LSB: Chapters 3, 4, and 8 LSBE: Chapters 7, 10, 11, and 12
12	3/23-3/27	Data Formats and Data Cleaning in SAS HW5: Due 4/2	LSBE: Chapters 5, 11, and 12
13	3/30-4/3	Data Manipulation in SAS	LSB: Chapters 5 and 6 LSBE: Chapters 8, 13, and 23
14	4/6-4/10	Statistical Analysis and Simulations in SAS HW6: Due 4/16	LSB: Chapter 9
15	4/13-4/17	SAS Macros and Output Delivery System (ODS)	LSB: Chapters 5, 7, and 8 LSBE: Chapters 19 and 25
16	4/20-4/24	Work on SAS Project SAS Project: Due 4/21	

Note: LSB = Little SAS Book, LSBE = Learning SAS by Example. This schedule is tentative and subject to change.

Course Materials and Technology

Textbooks

There is no single textbook that covers the material in this course. Listed below are a few suggested references for programming and statistical analyses using SAS and R. These books are available for free as electronic e-books as part of library holdings.

- The Little SAS Book: A Primer 5th ed., by Lora Delwiche and Susan Slaughter, SAS Institute: Cary, NC (2012). Available for free through the [UF library](#)
- Learning SAS by Example, by Ron Cody, SAS Institute: Cary, NC (2007). Available for free through the [UF library](#).
- The Book of R: A First Course in Programming and Statistics, by Tilman M. Davies, No Starch Press: San Francisco (2016). Available for free through the [UF library](#)
- R for Data Science, by Garrett Grolemund and Hadley Wickham. Available online for free from [link](#)

Software

All students must have access to a computer in class with SAS 9.3 or higher installed and the ability to run R 3.4 or higher.

For SAS program purchase information and online documents, please see <http://helpdesk.ufl.edu/software-services/spss/> (or search for “SAS Licensing for Students” at <https://software.ufl.edu/>). SAS can also be used free through UFApps at <https://apps.ufl.edu/vpn/index.html>.

R is available for free and can be download at <https://www.r-project.org/>, RStudio can be downloaded at <https://www.rstudio.com/products/rstudio/download/>.

Computing requirements can be found at <http://mph.ufl.edu/current-students/student-essentials/technology-requirements/>.

For technical support for this class, please contact the UF Help Desk at:

- Learning-support@ufl.edu
- (352) 392-HELP - select option 2
- <https://lss.at.ufl.edu/help.shtml>

Academic Requirements and Grading

Assignments

Grades will be based on labs, homework and projects.

- **Labs** will consist of a series of short programming exercises as practice for the concepts discussed during the lecture. These will be discussed in class and submitted in CANVAS before the next class.

Labs are graded for completion. In the case of an excused absence, late lab assignments will be accepted for full credit. No credit will be given for missed labs in the case of an unexcused absence.

- **Homework** assignments will be assigned every 2 weeks. The homework are short programming exercises using the SAS/R skills covered during the previous weeks. Homework will be graded for accuracy in completing the assigned programming task. Late submissions will result in a 10% point deduction. No assignments will be accepted more than 1 day late without prior approval from the instructor.
- **SAS and R projects** will be completed by each student. These projects will consist of code with output to demonstrate the skills learned during this course applied to a dataset chosen by the student. A grading rubric will be provided with the project assignment.

Grading

Requirement	% of final grade
In-class Labs (20)	30%
Homework (6)	30%
R Project	20%
SAS Project	20%

Point system used (i.e., how do course points translate into letter grades).

Points earned	93-100	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	Below 60
Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E

Please be aware that a C- is not an acceptable grade for graduate students. The GPA for graduate students must be 3.0 based on 5000 level courses and above to graduate. A grade of C counts toward a graduate degree only if based on credits in courses numbered 5000 or higher that have been earned with a B+ or higher.

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	WF	I	NG	S-U
Grade Points	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0.0	0.0	0.0	0.0	0.0

More information on UF grading policy may be found at:

<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades>

Policy Related to Make up Work

Students are allowed to make up work ONLY as the result of excused absences consistent with the College policy. Work missed for excused absences will be accepted for full credit, but work missed for any other reason will receive a grade of zero.

Please note: Any requests for make-ups due to technical issues MUST be accompanied by the UF Computing help desk (<http://helpdesk.ufl.edu/>) correspondence. You MUST e-mail me within 24 hours of the technical difficulty if you wish to request a make-up.

Policy Related to Required Class Attendance

Class attendance is mandatory. Excused absences require appropriate documentation. Excused absences should be communicated to the instructor PRIOR TO missed class days when possible. Regardless of attendance, students are responsible for all materials presented in class and meeting the scheduled due dates for class assignments. Please note all faculty are bound by the UF policy for excused absences.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Excused absences must be consistent with university policies in the Graduate Catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>). Additional information can be found here: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Student Expectations, Roles, and Opportunities for Input

Expectations Regarding Course Behavior

Students are expected to show up for class prepared and on time. Students are responsible for all materials presented in class and meeting the scheduled due dates for class assignments. Students should preview the currently assigned materials prior to the class meetings, and be prepared to discuss the material. Cell phones are to be silenced during class unless there is an emergency, in which case please inform the instructor.

Communication Guidelines

Questions about the course material should be asked in class, through e-mail or the CANVAS Inbox.

Academic Integrity

Students are expected to act in accordance with the University of Florida policy on academic integrity. As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge:

“We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.”

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied:

“On my honor, I have neither given nor received unauthorized aid in doing this assignment.”

It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For additional information regarding Academic Integrity, please see Student Conduct and Honor Code or the Graduate Student Website for additional details:

<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>

<http://gradschool.ufl.edu/students/introduction.html>

Please remember cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

Online Faculty Course Evaluation Process

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Policy Related to Guests Attending Class

Only registered students are permitted to attend class. However, we recognize that students who are caretakers may face occasional unexpected challenges creating attendance barriers. Therefore, by exception, a department chair or his or her designee (e.g., instructors) may grant a student permission to bring a guest(s) for a total of two class sessions per semester. This is two sessions total across all courses. No further extensions will be granted. Please note that guests are **not** permitted to attend either cadaver or wet labs. Students are responsible for course material regardless of attendance. For additional information, please review the Classroom Guests of Students policy in its entirety. Link to full policy: <http://facstaff.php.ufl.edu/services/resourceguide/getstarted.htm>

SUPPORT SERVICES

Accommodations for Students with Disabilities

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester. The College is committed to providing reasonable accommodations to assist students in their coursework.

Counseling and Student Health

Students sometimes experience stress from academic expectations and/or personal and interpersonal issues that may interfere with their academic performance. If you find yourself facing issues that have the potential to or are already negatively affecting your coursework, you are encouraged to talk with an instructor and/or seek help through University resources available to you.

- The Counseling and Wellness Center 352-392-1575 offers a variety of support services such as psychological assessment and intervention and assistance for math and test anxiety. Visit their web site for more information: <http://www.counseling.ufl.edu>. On line and in person assistance is available.
- You Matter We Care website: <http://www.umatter.ufl.edu/>. If you are feeling overwhelmed or stressed, you can reach out for help through the You Matter We Care website, which is staffed by Dean of Students and Counseling Center personnel.
- The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: <https://shcc.ufl.edu/>
- Crisis intervention is always available 24/7 from:
Alachua County Crisis Center:
(352) 264-6789
<http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx>

Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance. You are not alone so do not be afraid to ask for assistance.

Inclusive Learning Environment

Public health and health professions are based on the belief in human dignity and on respect for the individual. As we share our personal beliefs inside or outside of the classroom, it is always with the understanding that we value and respect diversity of background, experience, and opinion, where every individual feels valued. We believe in, and promote, openness and tolerance of differences in ethnicity and culture, and we respect differing personal, spiritual, religious and political values. We further believe that celebrating such diversity enriches the quality of the educational experiences we provide our students and enhances our own personal and professional relationships. We embrace The University of Florida's Non-Discrimination Policy, which reads, "The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act." If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see your instructor or refer to the Office of Multicultural & Diversity Affairs website: www.multicultural.ufl.edu
